Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	**)**	
	)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz	**)**	GN Docket No. 17-183
	)	

REPLY COMMENTS OF COMPETITIVE CARRIERS ASSOCIATION

Steven K. Berry
Rebecca Murphy Thompson
Courtney Neville
COMPETITIVE CARRIERS ASSOCIATION
805 15th Street NW, Suite 401
Washington, DC 20005

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REPLY COMMENTS OF COMPETITIVE CARRIERS ASSOCIATION

Competitive Carriers Association ("CCA")[1] applauds the Federal Communications Commission's ("FCC" or "Commission") efforts to make more spectrum available for mobile broadband services across the mid-bands, and submits these reply comments in response to the record and the Commission's Notice of Inquiry seeking comment on potential opportunities for flexible use of spectrum between 3.7 and 24 GHz ("mid-bands").[2] Mid-band spectrum provides a unique opportunity to advance the United States' position in the race to 5G. CCA therefore supports ambitious, but prudent, action to make more mid-band spectrum available for coming next-generation deployments.

CCA strongly agrees with Chairman Pai that mid-band spectrum will help to "close the mobile digital divide so that American consumers, especially in rural areas, won't be eternally 'stuck in the middle'" themselves.[3] Accordingly, CCA's initial comments in this proceeding requested that the Commission fully explore all possible approaches to expanding flexible use of

[1] CCA is the nation's leading association for competitive wireless providers and stakeholders across the United States. CCA's membership includes nearly 100 competitive wireless providers ranging from small, rural carriers serving fewer than 5,000 customers to regional and national providers serving millions of customers. CCA also represents associate members including vendors and suppliers that provide products and services throughout the mobile communications ecosystem.

[2] *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz, Notice of Inquiry,* Notice of Inquiry, 32 FCC Rcd 6373 (2017) ("*Mid-Band NOI" or "NOI"*).

[3] Statement of Chairman Ajit Pai, *Expanding Flexible Use in Mid-Band Spectrum Between 3.7 and 24 GHz,* Notice of Inquiry, GN Docket No. 17-183 (rel. Aug. 3, 2017).

the 3.7-4.2 GHz band.[4] As Commissioner O'Rielly aptly recognizes, there are numerous potential avenues for making the 3.7-4.2 GHz band available for mobile use, and CCA reiterates its request for a thoughtful and wide-ranging discussion of all possible means of doing so.[5] As previously noted, an interference plan would protect incumbent users currently providing critical services to unserved, underserved, and rural areas, while simultaneously creating opportunities for new wireless applications throughout the band and across the country.[6] Finally, CCA supports exploration of unlicensed and licensed uses in the 6 GHz bands, while ensuring adequate protection of incumbent users.[7]

I. THERE IS SIGNIFICANT SUPPORT IN THE RECORD FOR FLEXIBLE USE OF THE 3.7-4.2 GHZ BAND.

A wide range of commenters from across the telecommunications industry join CCA in recommending that the FCC explore ways to support licensed, flexible use in the 3.7-4.2 GHz band.[8] Like CCA, these commenters agree that the 3.7-4.2 GHz band is particularly well-suited for 5G wireless services.[9] In light of the apparent underutilization of the band in certain areas, and its particular importance for the next generation of wireless services, CCA reiterates its

[4] *See, generally*, Comments of Competitive Carriers Association, RM-11791, GN Docket No. 17-183 (filed Aug. 7, 2017) ("CCA Comments").

[5] Commissioner Michael O'Rielly, Federal Communications Commission, "A Mid-Band Spectrum Win in the Making," (Jul. 10, 2017) at https://www.fcc.gov/news-events/blog/2017/07/10/mid-band-spectrum-win-making.

[6] CCA Comments at 5.

[7] *Id*. at 4.

[8] *See* Comments of T-Mobile, GN Docket No. 17-183 (filed Oct. 2, 2017) at 7-13 ("T-Mobile Comments"); Comments of Verizon, GN Docket No. 17-183 (filed Oct. 2, 2017) at 13-14 ("Verizon Comments"); Comments of CTIA, GN Docket No. 17-183 (filed Oct. 2, 2017) at 2 ("CTIA Comments"); Comments of Nokia, GN Docket No. 17-183 (filed Oct. 2, 2017), at 2 ("Nokia Comments"); Comments of Ericsson, GN Docket No. 17-183 (filed Oct. 2, 2017) at 5-6 ("Ericsson Comments").

[9] *See* CTIA Comments at 2; Joint Comments of Intelsat and Intel, GN Docket No. 17-183 (filed Oct. 2, 2017) at 1 ("Joint Intelsat and Intel Comments").

request that the FCC consider a broad range of possibilities to make the 3.7-4.2 GHz band available for flexible use. CCA also reiterates that in designing a plan for flexible use of the 3.7-4.2 GHz band, the Commission must still protect incumbent users, particularly those serving rural and remote areas.[10]

Further, the record reflects several approaches to supporting licensed, flexible use of the band while protecting incumbents, including: facilitating alternative transmission options for 3.7-4.2 GHz incumbents; changes to the FSS service rules that could improve the prospects of sharing in the band; physical relocation of FSS earth stations to more remote and less spectrally congested areas; structuring market-based or other economic incentives for incumbent relocation (e.g., auction, and/or payment of relocations expenses); or some combination of multiple approaches. Each of these approaches has received attention in the record and should be further considered.[11]

A. Relocation Using Alternative Transmission Options for FSS and FS.

CCA agrees with multiple commenters, including T-Mobile, Verizon, and CTIA, that encourage the Commission to fully consider other bands or transmission options that might serve the needs of 3.7-4.2 GHz band incumbents.[12] These commenters identify potential opportunities for FSS incumbents to transition their content distribution to fiber, in areas where fiber is available,[13] or to the Ku- or Ka-bands, depending on satellite system capabilities and attenuation

[10] As CCA has previously noted, to the extent the Commission modifies its rules for this band, it should consider carve-outs for areas in which providers are actively using the 3.7-4.2 GHz band to provide services to consumers and businesses. CCA Comments at 5.

[11] *See, e.g.*, T-Mobile Comments at 15; Verizon Comments at 17-20; CTIA Comments at 10-13.

[12] *See, e.g.*, T-Mobile Comments at 14; Verizon Comments at 13; CTIA Comments at 4-6.

[13] T-Mobile Comments at 14 (highlighting the robust fiber deployment across the country, and noting estimates that fiber infrastructure is deployed in 273 cities); Verizon Comments at 18 (suggesting that fiber could substitute for satellite in certain areas and provide greater capacity).

factors.[14] The record suggests that these alternative transmission options could provide superior capacity for content and higher levels of throughput, and the Commission should consider these factors in this proceeding. While CCA acknowledges that alternative transmission options may not prove viable in all cases, CCA disagrees with commenters that claim that there are no reasonable substitutes for the 3.7-4.2 GHz band.[15] In certain circumstances, fiber or alternative bands could be suitable for specific deployment scenarios and should be fully examined.[16]

B. The Commission Should Consider Changes to FSS Service Rules to Better Facilitate Sharing.

Where relocation using other transmission options or bands is not possible, CCA joins other commenters in urging the Commission to examine whether some form of sharing the 3.7-4.2 GHz band while protecting incumbents (especially those serving rural and remote areas) is possible.[17] CCA notes, however, that it may be necessary to make changes to the service rules governing FSS use of the band to make commercially viable shared use possible.

The *Mid-Band NOI* seeks comment on whether and how FSS service rules could be modified to enable flexible use in the band and stimulate investment and deployment.[18]

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[14] Verizon Comments at 17-18 (suggesting that fiber or the Ku-band could be viable substitutes for FSS content distribution); CTIA Comments at 10-11 (suggesting that either Ku- or Ka-bands could provide alternative capacity for FSS incumbents).

[15] *See, e.g.*, Comments of Satellite Industry Association, GN Docket No. 17-183 (filed Oct. 2, 2017) at 34-39 ("SIA Comments"); Comments of SES Americom, GN Docket No. 17-183 (filed Oct. 2, 2017) at 3 ("SES Americom Comments"); Comments of American Cable Association, GN Docket No. 17-183 (filed Oct. 2, 2017) at 16 ("ACA Comments").

[16] In addition to protecting incumbent services in rural areas, the Commission should strike a careful balance to avoid disrupting operations that offer mobile broadband throughout Alaska. As GCI notes, the company "must utilize a variety of technologies in order to provide dependable services, and often must do so in innovative ways. This includes using FSS in conjunction with its terrestrial mobile and fixed wireless networks, largely in areas where fiber deployment is not possible." The FCC should therefore specially consider Alaska operations when considering changes to this spectrum band. *See* Comments of General Communication Inc., GN Docket No. 17-183 at 2 (filed Oct. 2, 2017) ("GCI Comments").

[17] *See, e.g.*, T-Mobile Comments at 24; Verizon Comments at 19.

[18] *Mid-Band NOI*, 32 FCC Rcd at 6380 ¶ 18.

Numerous commenters highlight the spectral inefficiency of the current "full-band, full-arc" frequency coordination practice allowed under the rules for FSS earth stations.[19] These commenters point out that the practice effectively blocks access to a full 500 MHz of spectrum across the entire horizon, when most FSS earth stations only use a small fraction of that spectrum in a portion of the geostationary arc.[20]

Satellite operators and broadcasters claim that full-band, full arc coordination is essential for incumbent providers.[21] SIA, NAB, and others argue that full-band, full-arc coordination is critical to ensure necessary flexibility and redundancy for operators to repoint dishes and change channels.[22] However, even AT&T, which claims to rely on full-band, full-arc coordination for certain of its satellite operations, recognizes that it could be reformed to weed out any inappropriate or inefficient use.[23]

In light of the record – and evidence that in certain circumstances the "full-band, full-arc" coordination approach results in an inefficient use of the band – CCA encourages the

[19] CTIA Comments at 13-14; Verizon Comments at 12-13; Ericsson Comments at 7-8; Comments of Microsoft, GN Docket No. 17-183 (filed Oct. 2, 2017) at 3 ("Microsoft Comments"); Nokia Comments at 9; Comments of Dynamic Sharing Alliance, GN Docket No. 17-183 (filed Oct. 2, 2017) at 6-7 ("DSA Comments"); Comments of Utilities Technology Council and Edison Electric Institute, GN Docket No. 17-183 (filed Oct. 2, 2017) at 13 ("UTC Comments"). *See also* T-Mobile Comments at 14, note 55, *quoting* Comments of Fixed Wireless Communications Coalition, RM-11791, at 2 (filed Aug. 7, 2017) ("[A]ny efficient use of the [3.7-4.2 GHz] band is predicated on eliminating the extreme inefficiencies of FSS full-band, full-arc coordination.").

[20] *See, e.g.*, Nokia Comments at 8-9; CTIA Comments at 8-9.

[21] SIA Comments at 25, 31; Comments of Sirius XM, GN Docket No. 17-183 (filed Oct. 2, 2017) at 10 ("Sirius XM Comments"); SES Americom Comments at 7; Comments of National Association of Broadcasters, GN Docket No. 17-183 (filed Oct. 2, 2017) at 4-5 ("NAB Comments"); Comments of National Public Radio, GN Docket No. 17-183 (filed Oct. 2, 2017) at 6-7 ("NPR Comments"); Comments of North American Broadcaster Association, GN Docket No. 17-183 (filed Sept. 29, 2017) at 5-6 ("NABA Comments"); Comments of Tucson Electric Power, GN Docket No. 17-183 (filed Oct. 2, 2017) at 10.

[22] SIA Comments at 28; NAB Comments at 5.

[23] Comments of AT&T, GN Docket No. 17-183 (filed Oct. 2, 2017) at 11 ("AT&T Comments").

Commission to reevaluate this coordination practice with a high degree of scrutiny, and consider eliminating its use. In many cases, maintaining the full-band, full-arc approach could impair future shared use of the band. The 3.7-4.2 GHz band is valuable to the next generation of wireless services, and its use should not be hindered by outdated or spectrally inefficient practices.

II. THE FCC SHOULD BETTER UNDERSTAND HOW THE 3.7-4.2 GHZ BAND IS UTILIZED.

Despite its potential to be a keystone band in the U.S.'s 5G efforts, numerous commenters, including CCA members T-Mobile and Nokia, have presented compelling evidence that the 3.7-4.2 GHz band is currently underutilized.[24] The FCC's *Notice of Inquiry* also notes the low number of Fixed Satellite Service ("FSS") and Fixed Service ("FS") uses in the band.[25] As such, it is possible that the database includes entries for FSS earth stations that simply do not exist. Though some commenters claim that the band is heavily used and relied upon for video content distribution and other services,[26] the declining registrations and missing earth station sites do not support assertions that the band is being well-utilized. The 3.7-4.2 GHz band is undoubtedly important to some existing users, but that importance is not proof that the spectrum is being put to its highest and best use. To determine the optimal approach to making the 3.7-4.2 GHz band available for flexible use, the Commission must have a more accurate understanding of actual incumbent use in the band.

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[24] T-Mobile Comments at 3; Verizon Comments at 11; CTIA Comments at 8; Microsoft Comments at 3; Comments of Google, GN Docket No. 17-183 (filed Oct. 2, 2017) at 4-6 ("Google Comments"); Nokia Comments at 7.

[25] *Mid-Band NOI*, 32 FCC Rcd at 6379 ¶ 15.

[26] *See, e.g.*, SIA Comments at ii, 6-12; ACA Comments at 4-5; NAB Comments at 2; Sirius XM Comments at 7; Comments of NCTA – the Internet and Television Association, GN Docket No. 17-183 (filed Oct. 2, 2017) at 3 ("NCTA Comments"); SES Americom Comments at 2-4; GCI Comments at 4-6; AT&T Comments at 5.

A. The Commission Should Update and Correct any Errors in the FSS Registration Information in the International Bureau Filing System.

Given the critical questions regarding the accuracy of the FSS registrations in the International Bureau Filing System ("IBFS") database, CCA joins numerous commenters, including the Satellite Industry Association itself,[27] in encouraging the Commission to conduct a review of its database to ensure accurate data regarding FSS and FS incumbents.[28] Despite the satellite industry's assertions that FSS use is significantly higher than registrations would reflect,[29] an apparent over-registration of earth stations demonstrates a clear need for correcting the database errors.

CCA believes that database errors and over-registration of licensees in IBFS are an impediment to the development of a solution to allow flexible use of the 3.7-4.2 GHz band, and more efficient use of mid-band spectrum generally. Cleaning up the data in the IBFS will provide the Commission with more accurate situational awareness to make informed policy decisions.

III. CCA CONTINUES TO SUPPORT CAREFUL CONSIDERATION OF ADDITIONAL SERVICES IN THE 6 GHZ BANDS.

CCA continues to support the Commission's consideration of allowing unlicensed services in the 5.925-6.425 GHz and 6.425-7.125 GHz ("6 GHz" bands). At the same time, CCA joins numerous commenters encouraging the Commission to explore licensed use of the band,

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[27] Opposition of Satellite Industry Association to Petition for Rulemaking Filed by Broadband Access Coalition, RM-11791 (filed Aug. 7, 2017) at 8.

[28] *See, e.g.,* Microsoft Comments at 3; Comments of Wi-Fi Alliance, GN Docket No. 17-183 (filed Oct. 2, 2017) at 8 ("Wi-Fi Alliance Comments"); Comments of Broadband Access Coalition, GN Docket No. 17-183 (filed Oct. 2, 2017) at 8-9 ("BAC Comments"); DSA Comments at 7; Comments of Qualcomm, GN Docket No. 17-183 (filed Oct. 2, 2017) at 3-4 ("Qualcomm Comments").

[29] ACA Comments at 4 (ACA asserts that FSS and its users "use more spectrum, and are more numerous and widespread, than the record suggests.").

though it also cautions the Commission that such uses must not cause interference to incumbent users serving rural areas, or to public safety or critical infrastructure incumbent users.[30] Specifically, the Commission asks whether the 6.425-7.125 GHz band, which is currently allocated for non-federal FS and FSS use on a primary basis, can be used for mobile broadband services.[31] CCA supports exploring flexible use of the band, including whether some or all of the band should be reserved for licensed mobile broadband services, to the extent that incumbent operations are not disturbed.[32] As noted in the record, certain portions of the 6 GHz band may be suitable for licensed operations, while others could be appropriately dedicated for unlicensed services, with adequate protections for incumbent operations.[33] In doing so, the FCC should implement a specific process to determine whether and how these operations can coexist. Because of mid-band spectrum's positive traits and the potential for widespread innovation, it is important that the Commission initiate a rulemaking to fully explore use of each of these bands to determine the optimal way to use them and thereby maximize this spectrum.[34]

While CCA recognizes the vast potential of these bands, CCA likewise agrees with most commenters that incumbent users of the 6 GHz bands must be protected.[35] Specifically, unlicensed devices that utilize the 5.925-6.425 GHz band must protect incumbent services in the

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[30] *See* T-Mobile Comments at 16-17; Verizon Comments at 21-22; and Ericsson Comments at 9; Comments of United States Cellular Corporation, GN Docket No. 17-183 (filed Oct. 2, 2017) at 1 ("US Cellular Comments"); Comments of APCO, GN Docket No. 17-183 (filed Oct. 2, 2017) at I ("APCO Comments"); Comments of the National Public Safety Telecommunications Council, GN Docket No. 17-183 (filed Oct. 2, 2017) at 4-5 ("NPSTC Comments"); Comments of City of Mesa, Arizona, GN Docket No. 17-183 (filed Sept. 20, 2017), at 2 ("City of Mesa Comments").

[31] *Mid-Band NOI*, 32 FCC Rcd at 6384-85 ¶¶ 32, 36.

[32] T-Mobile Comments at 17.

[33] *Id*. at 3.

[34] CCA Comments at 4.

[35] *See, e.g.*, T-Mobile Comments at 16; Verizon Comments at 21; Ericsson Comments at 9; Google Comments at 13; NAB Comments at 1; GCI Comments at 1.

band, and must not interfere with certain licensed operations.[36] What's more, a wide range of commenters express significant concern about the risk of interference posed by flexible use in the 6 GHz bands, particularly with respect to the difficulty isolating, identifying, and/or locating sources of interference into fixed microwave links from intermittently operating mobile devices.[37] CCA appreciates these concerns, as well as incumbents' concerns regarding the time and costs involved in effective enforcement of mitigation measures.[38] Accordingly, the Commission should seek further information on the cost of mitigating harmful interference, and identify appropriate mechanisms to help defray the cost of protecting incumbents.

IV. THE FCC SHOULD INITIATE A RULEMAKING TO EXPLORE FUTURE USES OF MID-BAND SPECTRUM.

The record reflects broad acknowledgment by commenters, including those in the satellite industry, that the 3.7-4.2 GHz band is particularly well-suited for mobile flexible use.[39] Accordingly, we join other commenters, including T-Mobile, Verizon, CTIA, and Ericsson, in urging the Commission to promptly initiate a rulemaking exploring whether to designate the 3.7-

[36] *See* T-Mobile Comments at 17; US Cellular Comments at 6.

[37] *See* City of Mesa Comments at 2; LA County Comments at 4; Comments of CenturyLink, GN Docket No. 17-183 (filed Oct. 2, 2017) at 6 ("CenturyLink Comments"); Comments of Southern Companies, GN Docket No. 17-183 (filed Oct. 2, 2017) at 6 ("Southern Companies Comments"). *See also* Comments of State of Maryland, GN Docket No. 17-183 (filed Oct. 2, 2017) at 6 ("[P]reserving the integrity of public safety microwave communications is also in the public interest and the safety of first responders is more important than the expansion of wireless broadband without technological protections."). *See also* Letter from Leighton T. Brown, Counsel for United States Cellular Corporation, Holland & Knight LLP, to Marlene H. Dortch, Secretary, FCC, GN Docket Nos. 14-177 and 17-183 (filed Nov. 13, 2017) (noting that the Commission should protect "essential microwave systems" operated by service providers in the 6 GHz band).

[38] *See, e.g.*, Southern Companies Comments at 6 ("It is contrary to the public interest to jeopardize systems that are used for public safety and operation of the nation's critical infrastructure, and to impose the burden on them to track down and enforce interference mitigation efforts against mobile service licensees.").

[39] *See, e.g.*, Joint Intelsat and Intel Comments at 1 ("The propagation characteristics as well as global 5G development plans make the 3700-4200 MHz band highly valuable and attractive for terrestrial mobile use."). *See also* Nokia Comments at 2; CTIA Comments at 2; Verizon Comments at 2.

4.2 GHz band for flexible use.[40] This rulemaking also should explore the efficacy of a mid-band interference plan to protect incumbent users currently providing critical services to unserved, underserved, and rural areas. CCA also encourages the Commission to continue examining the potential for flexible use in the 6 GHz bands, including implementation challenges and ways to mitigate barriers to deployment.

V. CONCLUSION.

The fate of the United States in the race to 5G rests upon the Commission's ability to balance difficult choices regarding the use of critical spectrum resources, including mid-band spectrum. CCA is encouraged by the Commission's decision to explore the wealth of innovation opportunities that the mid-bands provide. This process should involve cleaning up the Commission's licensing database to ensure that it has accurate data regarding incumbent uses. The FCC also should launch a rulemaking to propose flexible use of the 3.7-4.2 GHz band and to further consider licensed and unlicensed use of the 6 GHz bands, while protecting incumbents in the band that serve unserved, underserved, and rural areas. CCA looks forward to continued work with industry and the FCC to further pave the road to 5G.

Respectfully submitted,

/s/ Rebecca Murphy Thompson

Steven K. Berry
Rebecca Murphy Thompson
Courtney Neville
COMPETITIVE CARRIERS ASSOCIATION
805 15th Street NW, Suite 401
Washington, DC 20005

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[40] *See* T-Mobile Comments at 1; Verizon Comments at 20; CTIA Comments at 2-3; Ericsson Comments at 3.